Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Performance Meassurements and	)	CC Docket No.98-56
Reporting Requirements for Operations	)	RM-9101
Support Systems, Interconnection, and	)	
Operator Services and Directory Assistance	)	

COMMENTS OF THE
NATIONAL EMERGENCY NUMBER ASSOCIATION

The National Emergency Number Association ("NENA") hereby comments on the Notice of Proposed Rulemaking ("Notice), FCC 98-72, released April 17, 1998. NENA's response is limited to the discussion at ¶¶77-79 of the Notice, captioned "911 Database Update and Accuracy."

Observing that the relative accuracy and currency of 911 and E911 databases -- as between incumbent Local Exchange Carriers ("LECs"), who often maintain such databases, and their local competitors ("CLECs") -- has been an issue in evaluating nondiscriminatory access under Section 251 of the Communications Act, the Commission first asks whether "federal reporting requirements are necessary to monitor possible discrimination" or whether existing oversight by the several states and their regulatory commissions is sufficient. (Notice, ¶77)

The Notice proposes only "model performance measurements and reporting requirements . . . that are not legally binding." Experience under such non-binding guidance could provide a "more informed and comprehensive record upon which to decide whether to adopt national, legally binding rules." (Notice, ¶4)

> The adoption of national rules may, however, prove to be unnecessary in light of the states' and carriers' application of the model performance measurements and reporting requirements . . . *Id.*

Apparently the Commission itself is not convinced that federal reporting requirements are necessary and wants to see how well carriers take to voluntary compliance.

Under these circumstances, NENA sees no immediate need to displace the traditional oversight of the states that have certified both the incumbents and their competitors -- typically in the expectation that 9-1-1 service is a core offering that will be delivered reliably as a condition of license.

We would point out to both the FCC and the state commissions that NENA has been working with incumbent LECs and their competitors on formats and protocols for data exchange (Attachment A), measurements for data quality (Attachment B), and 9-1-1 service standards in general (Attachment C) We urge that any guidance in these areas from the federal or non-federal level take note of this ongoing collaboration and incorporate the useful features.

When Sections 2.1-2.16 of the data quality measurements document (NENA 02-004, June 1996) are compared with Chart G of Appendix A of the Notice, the most notable difference is the greater comprehensiveness of the NENA measurements. Both documents use percentages and averages as indices of performance. The general service standards document (NENA 02-005) incorporates the data quality targets of NENA 02-004 at Section 1.9.

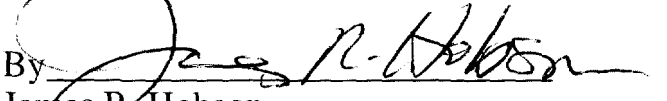
NENA published versions of recommended data exchange formats -- for use in standardizing telephone subscriber number and address (or location) information -- in 1991 and 1993. An updated third version is out for comment by the NENA membership. Although national standardization

in data exchange among both wireline and wireless carriers (and third-party database service providers) is the aim, it is far from realized today. A national carrier may find itself having to maintain nine or more data exchange and protocol formats because of carrier-to-carrier and state-to-state variations.

The use of multiple formats is bound to have a negative effect on performance standards measuring timely and accurate entry of constantly changing data. The FCC and the states can help by urging adherence to the NENA voluntary formats and protocols for data exchange.

Respectfully submitted,

NATIONAL EMERGENCY
NUMBER ASSOCIATION

By 

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June 1, 1998

ITS ATTORNEY

Attachment A (excerpt)

Full Text at NENA website,
www.nena9-1-1.org

FOR REVIEW AND COMMENT

The following document is now ready for review and comment. The feedback period is 30 days, beginning May 4, 1998 and continuing until June 3, 1998.

Please send all comments to:

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Thank you in advance for your time and comments.

Please note: A lot of formatting was lost in the conversion of this file into a web page. If you want to download the Word 6.0 file will all the correct formatting, click below.

Click here to download the "NENA Recommended Formats For Data Exchange" NENA-02-001 - Revised to include Version 3

NENA

Recommended Formats

For Data Exchange

TABLE OF CONTENTS

Version 3 Formats

Prepared by:

National Emergency Number Association (NENA) Data Technical Committee

Published by:

National Emergency Number Association (NENA)

Printed in U.S.A.

INTRODUCTION

1.1 Purpose

This document sets forth NENA standard formats for Automatic Location Identification (ALI) data exchange between Service Providers and Data Base Management System Providers.

Movement of ALI data between Service Providers and/or Data Base Management System Providers is a necessary activity for the activation of E9-1-1 systems. Means of moving such data is varied and many.

1.2 Copyright and Responsibility

1.3 Disclaimer

This document has been prepared solely for the voluntary use of Data Base Management System Providers , E9-1-1 equipment vendors, and participating Service Providers. By using this practice, the user agrees that the National Emergency Number Association (NENA) will have no liability for any consequential, incidental, special, or punitive damages that may result.

Overview

The original version 1 document was created in June 1991 to provide established formats for exchange of 9-1-1 data between Service Providers and the Data Base Management System Providers. The format was created in a fixed format with 232 characters available within the record format for ALI data.

Version 2 Data Exchange Formats were added June 1993 to provide for exchange of additional data fields, expanding of specific fields to allow for increased characters and data fields for X,Y,Z coordinates. Version 2 also expanded the length of the data exchange format to 512 characters to allow room for future expansion of the record.

Version three (3) has been established due to the difficulty in modifying Version 2 standards. Version 3 has been created to reflect data formats utilizing a "Tag Data" concept, which creates a variable length record dependent upon the data fields being utilized between Service Providers and Data Base Management System Providers. Version 3 should support the data needs of 9-1-1 for many years.

1.5 Reason for Reissue

This standard has been reissued due to addition of a version 3 Data Exchange Format, utilizing a "Tagged Data with field labels" concept and includes additional fields and has updated field names to better reflect industry trends.. Version 1 has been changed to reflect current terminology in format description fields. Version 2 has been changed to reflect new fields which reflect the "year 2000" date identification and definition of the "Alt #" field for the "ALT#" associated with Interim Number Portability, to identify the Function Code indicators of "U"nlock and "M"igrate for Local Number Portability and to reflect current terminology in format description fields. The will be the last update to Version 2.

Acronyms/Terms

Acronyms and terms are those utilized within this document and also reside within the NENA Master Glossary of 9-1-1 Terminology NENA-01-002.

Term	*Definition*
Enhanced 9-1-1 (E9-1-1)	An emergency telephone system which includes network switching, database and CPE elements capable of providing Selective routing, Selective Transfer, Fixed Transfer, ANI and ALI.
Automatic Location Identification (ALI)	The automatic display at the PSAP of the caller's telephone number, the address/location of the telephone and supplementary emergency services information.
Data Base Management System (DBMS)	A system of manual procedures and computer programs used to create, store and update the data required to provide Selective Routing and/or Automatic Location Identification for 9-1-1 systems.
Data Base Management System Provider	Entity providing Selective Routing (SR) and/or Automatic Location Identification (ALI) data services.
Emergency Service Number (ESN)/Emergency Service Zone (ESZ)	An ESN is a three to five digit number representing a unique combination of emergency service agencies (Law Enforcement, Fire, and Emergency Medical Service) designated to serve a specific range of addresses within a particular geographical area, or Emergency Service Zones (ESZ). The ESN facilitates selective routing and selective transfer, if required, to the appropriate PSAP and the dispatching of the proper service agency(ies).
Emergency Service Routing Digit (ESRD)	(see Pseudo Automatic Number identification) (pANI))
Enhanced 9-1-1 (E9-1-1) Control Office	The Central Office that provides the tandem switching of 9-1-1 calls. It controls delivery of the voice call with ANI to the PSAP and provides Selective Routing, Speed Calling, Selective Transfer, Fixed Transfer and certain maintenance functions for each PSAP. Also known as 9-1-1 Selective Routing Tandem or Selective Router.
Local Exchange Carrier (LEC)	A Telecommunications Carrier (TC) under the state/local Public Utilities Act that provide local exchange telecommunications services. Also known as Incumbent Local Exchange Carriers (ILECs), Alternate Local Exchange Carriers (ALECs), Competitive Local Exchange Carriers (CLECs), Competitive Assess Providers (CAPs), Certified Local Exchange Carriers (CLECs), and Local Service Providers (LSPs).
Local Number Portability (LNP)	A process by which a telephone number may be reassigned from one Local Exchange Carrier to another.

Master Street Address Guide (MSAG)	A data base of street names and house number ranges within their associated communities defining Emergency Service Zones (ESZs) and their associated Emergency Service Numbers (ESNs) to enable proper routing of 9-1-1 calls.
National Emergency Number Association (NENA)	The National Emergency Number Association is a not-for-profit corporation established in 1982 to further the goal of "one Nation-One-Number." NENA is a networking source and promotes research, planning and training. NENA strives to educate, set standards and provide certification programs, legislative representation and technical assistance for implementing and managing systems.
Selective Routing (SR)	The routing of a 9-1-1 call to the proper PSAP based upon the location of the caller. Selective Routing is controlled by the ESN which is derived from the customer location.

Service Address	The physical location of a subscriber access line. Service Address is the recommended address for 9-1-1 use. (May be different from the listed address or the billing address).
Service Order	Local Exchange Carrier document used for additions, changes or removals of telephone service.
Service Provider	An entity providing one or more of the following 9-1-1 elements: network, CPE or database service.
Tag	A unique label that precedes the data for the data element associated with the tag.
Tag Data	A method of identifying data elements of varying lengths within a data record.
Tag Data Record	A record of varying length, comprised of pre-defined tag labels and their associated data elements.

1.7 Types of Formats

All data exchange formats utilize ASCII characters. The NENA Data Technical Committee has established 3 versions of standard
data formats for use by Service Providers and Data Base Management System Providers when exchanging E9-1-1 data base information. Three
(3)versions of standard format have been defined for each of the following:

- ALI data exchange

- MSAG data exchange

- Header and trailer records

Version 1 formats are the original NENA recommended formats utilizing the 240 character format for Data Exchange; 160 character format for
MSAG Data Exchange and 160 character format for Header and Trailer records.

Version 2 formats recognize that the original formats needed to be expanded to accommodate additional data fields critical to some data providers
and also recognizing that NENA must position the standard record for the future. Version 2 formats contain all data fields resident in Version 1
formats utilizing a 512 character format for Data Exchange; 200 character format for MSAG Data Exchange and 200 character formats for Header
and Trailer records.

Version 3 formats recognize that the previous formats were limiting distribution of data as technology evolved and the Data Technical
Committee, after much discussion, arrived at the present NENA Version 3 format, included in this document. This format takes a "Tag Data"
approach to information exchange for both wireline and wireless data distribution. Benefits include faster programming changes, more efficient
data transmission and smaller file sizes. It is strongly recommended that all Service Providers implement the NENA 3 data exchange format by
January 1, 2000 including the defined NENA 3 Header and Trailer records.

The NENA Data Technical Committee requires that Service Providers maintain consistency by utilizing formats consistent to one version. i.e.,
Header and Trailer records must be the same version format as the Data or MSAG Exchange formats utilized.

1.8 Reasons to Implement

Industry adoption of the standard will:

- Minimize costs incurred in providing E9-1-1 data base services.

- Ensure timely activation of E9-1-1 data base systems.

- Ensure consistent provision of ALI data.

- Enable data compatibility for system integration of E9-1-1 products and services.

1.9 When to Implement

Since many Service Providers, Data Base Management System Providers and equipment vendors are currently utilizing the original Version 1 and
2 data formats defined herein, it is strongly recommended that Version 3 formats be implemented to provide for future data needs. Service
Providers and the respective Data Base Management System Provider must jointly determine the data format most relevant to the system software
being utilized.

A goal of January 1, 2000 is recommended as the date when Service Providers are capable of sending data utilizing the revised Version 2 format and Version 3 format to the Data Base Management System Providers and they be capable of receiving the revised Version 2 and new Version 3 formats on January 1, 2000.

It is further understood that many in-service data flows may be unable to conform to the NENA formats by the target date, but the Data Technical Committee strongly recommends that every effort be made to conform to at least one of the recommended formats by January 1, 2000.

1.10 Data Content Considerations

Common Considerations:

All data exchange formats utilize ASCII characters.

Data Base Management System Providers should document how they utilize versions 1, 2 and 3 and the fields that their software systems can utilize.

The "General Use" field may be used when exchange partners agree to exchange information not defined

All data exchange formats utilize maximum numbers of characters for each field.

Header and Trailer records must be the same version format as the Data or MSAG Exchange formats utilized.

Version 1 & 2 formats:

Standard field location.

Fixed record lengths.

Data exchange formats require that complete data records be exchanged.

All data fields are treated as "left-justified" with trailing spaces.

Unused fields are space-filled.

Version 3 data formats:

A tag data record is a record of varying length, comprised of pre-defined tag labels and the associated data elements.

There is no particular sequence of the tag/data combinations within a Tag Data Record.

Each tag and its associated data is separated from all other tag/data combinations by a pre-defined field separator.

Each Tag Data Record is followed by a pre-defined End of Record character.

The receiving Data Base Management System Provider will specify the minimum set of tag/data elements required by that system to uniquely identify and process the record.

If the field is not being used (I.E: "Street Suffix", "Post Directional", "Customer Code") then the label is not used.

Data Technical Committee authorized new tags may be added to the record without changing the file format.

Header records will employ cycle counting to ensure a cycle of updates is not missed.

Trailer records will employ record counting to ensure a record within an update file is not missed.

Tag Data Processing Logic: Action taken on a field in an existing database record where incoming Version 3 record's Function of Change (FOC) is change "C".

INCOMING VERSION 3 FIELD	ACTION TAKEN ON EXISTING ALI RECORD
Tag not sent	Field unchanged
Tag, no data	Field cleared
Tag, with data	Field changed

1.11 Acknowledgments

Barb Thornburg Winstar Telecommunications (Chair)

Delaine Arnold GTE

Marcus Andronici SCC

Buddy Anthony GTE

Patty Bluhm HBF Group

Larry Ciesla Lucent

Judy Graham Time Warner Communications

Mike Guinta Bell Atlantic

Karen Hake Cincinnati Bell

Pat Harrison Ameritech

Beverly Hood Sprint

Pam Horne Southwestern Bell

Erica Kind State of Vermont E9-1-1 Board

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Tom Muehleisen ALLTEL

Diane O'Brochta Southwestern Bell

Beth Ozanich SCC

Dixie Palmer Washington County, OR

Jackie Rigard Pacific Bell

Diane Wada Emergency Communications Consulting (ECC)

EXHIBIT 1

VERSION 1 FORMAT FOR DATA EXCHANGE

FIELD NAME	POSITION	BYTES	TYPE	DESCRIPTION
Function Code	1	1	A	Type of activity the record is being submitted for. Valid entries: C Change D Delete I Insert

NENA-02-004
June 1996 (Original)

NENA
Recommended Measurements For Data Quality

TABLE OF CONTENTS

Prepared by:
National Emergency Number Association (NENA) Data Standards Sub-Committee

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National Emergency Number Association (NENA)

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INTRODUCTION

1.1 Purpose

This document sets forth NENA data quality measurements for any 911 system that provides information for data display. It defines measurements which will support meaningful computations to allow for a better understanding of data base quality and the timeliness of database updates.

1.2 Copyright and Responsibility

This practice was written by numerous representatives from the service provider and subscriber agency environments under the oversight of the NENA Data Standards Subcommittee. The NENA Executive Board has recommended this practice for industry acceptance and use. For more information about this practice, contact:

S. Robert Miller
NENA Standards Committee Chair
609-882-2000 Ext. 2970
or
Barb Thornburg
NENA Data Standards Subcommittee Chair
612-663-6328

1.3 Disclaimer

This document has been prepared solely for the voluntary use of those involved in providing 911 service.

By using this practice, the user agrees that the National Emergency Number Association (NENA) will have no liability for any consequential, incidental, special, or punitive damages that may result.

1.4 Acronyms/Terms

Acronym/Term	Definition
	Enhanced 9-1-1 (Name, address telephone number and ESN or responding agencies displayed)
Automatic Location Identification (ALI)	An E911 feature by which the name, address and responding agencies associated with the number of the telephone used to dial 911 is displayed at the PSAP at the time the call is answered.
Automatic Number Identification (ANI)	The automatic display of the telephone number of the calling party at the telecommunicators position.
Call Retrieval	The number of requests for ALI that are not duplicated within a two (2) minute time frame.

1.4 Acronyms/Terms (cont.)

Acronym/Term	Definition
Customer Retrieval	The number of requests for ALI that are not duplicated within a twenty-four (24) hour time frame.
Data Base	A data base is an organized collection of data that resides within computer magnetic storage. A data base is comprised of fields, records (data) and indexes. The fields are named for the type or kind of information contained in each, which may be alpha, numeric, or a combination of both. The data is the information contained within the field.
Day	A day in which processing of service order updates occurs.
Discrepancies	Discrepancies is a Service Provider term used to describe subscriber records that do not match with the MSAG data base and are printed to an error file or report for resolution.
Emergency Service Number/Emergency Service Zone (ESN/ESZ)	An ESN is a three to five digit number representing a unique combination of emergency service agencies (Police, Fire and Emergency Medical Service) designated to serve a specific range of addresses within a particular geographical area, or ESZ. The ESN facilitates the selective routing if required of a call to the appropriate PSAP and the dispatching of the proper service agency(ies).
Master Street Address Guide (MSAG)	A listing of all streets and house number ranges within a 9-1-1 service area. The streets and address ranges are assigned routing codes, or emergency service numbers (ESN's), to enable proper routing of 9-1-1 calls.
NENA	National Emergency Number Association
No Record Found (NRF)	A condition where a call placed to an Enhanced 9-1-1 telephone system results in no ALI information being available for display at the PSAP. There are a number of reasons for this to occur.
Participating Data Provider	An entity supplying subscriber information to the Service Provider.

1.4 **Acronyms/Terms (cont.)**

Acronym/Term	Definition
Public Safety Answering Point (PSAP)	An answering location for 9-1-1 calls originating in a given area. A PSAP may be designated as primary or secondary, which refers to the order in which calls are directed for answering. Secondary PSAPs receive calls on a transfer basis and generally serve as an answering location for a particular type of emergency call (i.e., Fire or EMS). PSAPs can be located at police, fire or emergency medical service communications centers, or may be located in a specialized centralized communications center which handles all emergency communications for an area. PSAP's may be represented by an agent or agency for data base administration.
Responsibility	The entity (Service Provider, PSAP) which is responsible for collection and reporting of the data associated with the measurement.
Selective Routing (SR)	This is the routing of a 9-1-1 call by the telephone system to the proper PSAP. Selective routing is accomplished by the ESN which is derived from the customer location information upon MSAG validation.
Selective Routing (SR) Data Base	The 9-1-1 selective routing translations that contain telephone number/ESN relationships which route the 9-1-1 call to the proper PSAP.
Service Order	Telephone company document used for additions, changes or removals of telephone service.
Service Provider	The entity(ies) responsible for the ALI system data management and/or retrieval. i.e., a Telephone Company, Data base or CPE vendor, PSAP or County.
Source Data Base	The data base maintained by each Participating Data Provider which provides customer telephone number and location information for the initial load and ongoing updates to the ALI data base held by the Service Provider.
TN	Telephone Number

1.5 Reasons to Implement

Industry adoption of the quality measurements will:

- improve the overall quality of the data base(s)
- facilitate official standards/guidelines for data base management
- assist counties, vendors, participating data providers and service providers with establishment of quality goals and creation of a common set of quality measurements for 911 systems
- improve communications and remove barriers across entities

1.6 How and When to Implement

Reporting and measurement shall be by system, state and service provider as a minimum.

Many quality measurements will have two (2) figures associated with them. There will be a percentage at system cutover and a continuing percentage. Unless otherwise noted, all measurements are to be made:

(1) at 9-1-1 system cutover
(2) a minimum of monthly thereafter

1.7 Acknowledgments

The membership of the Data Standards Sub-Committee would like to acknowledge the enormous time and effort commitments made to identification of the data quality measurements by many members of NENA:

Service Providers	Organization
Luther Bigby	BellSouth
Delaine Arnold	GTE
Lynn Chancellor	BellSouth
Judy Cortiana	Pacific Bell
Susan Johnston	Ameritech
Carolyn Maddox	Sprint
Dave Peterson	ALLTEL
Dave Pettit	Bell Atlantic
Pat Raulerson	U S WEST
Lyman Smith	GTE
Barb Thornburg	U S WEST

Subscriber/Consultant Agency	Organization
Mike Lucy	9-1-1 Solutions
Marcia Broman	Metro 9-1-1 Board, MN
John Elliott	Westchester County, NY
Adelle Gottleib	RAM Comm. Consultants, TX
Beth Ozanich	Tarrant County, TX
Mike Vagnerini	Napa Police Dept., CA
Judy Valentine	Sweetwater County, WY

Patricia Welte	Jacksonville, FL
Jack Zimmerman	Sweetwater County, WY

2.1 **ALI Records** - The number of working subscriber records available to be retrieved as a result of a 9-1-1 call.

Responsibility: Service Provider

Background Logic: "Working subscriber records" should not include disconnected records or subscribers that have moved beyond the 911 service area.

2.2 **ALI Call Retrievals** - The number of requests for ALI that are not duplicated within a two (2) minute time frame.

Responsibility: Service Provider

Background Logic: This means that if a Call Retrieval came in at 8:00 A.M. and another came in at 8:01 A.M. on the same telephone number, it would only count as one Call Retrieval. If a retrieval came in at 8:00 A.M. and another at 8:02 A.M. on the same telephone number, two Call Retrievals would be counted.

2.3 **ALI Customer Retrievals** - The number of requests for ALI that are not duplicated within a twenty-four (24) hour time frame.

Responsibility: Service Provider

Background Logic: If a call came in at 9:00 P.M. and another call from the same telephone number came in at 10:00 A.M. the next day, only one Customer Retrieval would be counted.

ALI Retrieval Background Logic: The ALI Retrievals are broken into two (2) separate elements in order to establish a relationship for the quality of the Retrievals as well as a measurement of the quality of the overall customer data base. The number of opportunities that the data base has to provide a response to a customer call about a single incident is different than the number of retrievals that is made from the data base since it is possible for multiple retrievals to be generated by hitting the "repeat ALI" button or transferring the call to another answering point. A "data base opportunity" is a retrieval from the data base that is not duplicated within a twenty-four (24) hour period. The intent of the Customer Retrievals is to measure incidents/opportunities. The twenty-four (24) hour interval would align more to the quality of the data base in that the error most likely would align to the number of actual calls received.

2.4 **Customer Records Processed** - The number of telephone number records from the participating data provider that should be loaded into the data base. This number includes those records accepted by the data base as well as those written to error files.

Responsibility: Service Provider

2.5 **Total Unresolved Discrepancies** - At the time of the Public Service Conversion and monthly thereafter, how many telephone number record discrepancies have not been resolved.

Responsibility: Service Provider

Background Logic: The discrepancy could be on the telephone subscriber record, or on the MSAG.

Data Element Relationship:

Total Unresolved Discrepancies	=	Percentage of Unresolved
Total ALI Records in Data Base		Discrepancies

2.5a **MSAG Related Discrepancies** - A count of the telephone number records not accepted by the initial data base load process or the service order update process in which the telephone number record address does not match the MSAG, as defined by the official addressing authority.

Responsibility: Service Provider

Background Logic: Both the MSAG and the subscriber telephone records should contain addresses defined by the official addressing authority.

Data Element Relationship:

Total MSAG Related Discrepancies	=	Percentage of MSAG
Total Telephone Number Records Processed		Related Discrepancies

2.5b **Non-MSAG Related Discrepancies** - A count of the telephone number records not accepted by the initial data base load process or the service order update process in which the telephone number record does not match system edits.

Responsibility: Service Provider

Data Element Relationship:

Total Non-MSAG Related Discrepancies	=	Percentage of Non-MSAG
Total Telephone Number Records Processed		Related Discrepancies

2.6 **Call No Record Found** - An ALI record not found for the telephone number sent to the PSAP and not duplicated within a two (2) minute time frame.

Responsibility: PSAP and Service Provider

Background Logic: (See ALI Call Retrievals)

Data Element Relationship:

Total Call NRF's	=	Percentage of Call
Total ALI Call Retrievals		No Record Found

2.7 **Customer No Record Found** - An ALI record not found for the telephone number sent to the PSAP and not duplicated within a twenty-four (24) hour time frame.

Responsibility: PSAP and Service Provider

Background Logic: (The same logic that was used for ALI Call Retrievals and ALI Customer Retrievals was used.)

Data Element Relationship:

Total Customer NRF's	=	Percentage of Customer
Total ALI Customer Retrievals		No Record Found

2.8 **MSAG Related Discrepancy Resolution Days** - The number of days that transpire from the date that the discrepancy occurs to the date that the discrepancy is resolved in the ALI and Selective Routing (SR) data bases.

Responsibility: Service Provider

Background Logic: If the fallout occurs today and is resolved tomorrow, it is counted as one day. Measurement for a partial day may be indicated in "tenths" of a day where the capability exists to measure in these increments.

Data Element Relationship:

Total MSAG Discrepancy Resolution Days	=	Average Days Required
Total MSAG Address Related Discrepancy		to Resolve Discrepancy

2.9 **Service Order Update Completion Days** - The number of days from the day the subscribers' order is completed to the date the subscriber information appears in the ALI and SR data bases.

Responsibility: Service Provider and Participating Data Provider

Data Element Relationship:

Total Service Order Update Completion Days	=	Average Days Required to
Total Subscriber Records Processed		Update ALI

2.10 **NRF Resolution Days** - The number of days from the date of the NRF to the date the NRF is resolved and the record is valid in the ALI and SR data bases.

Responsibility: Service Provider

Data Element Relationship:

Total NRF Resolution Days	=	Average Time to Correct an
Total Number of resolved NRFs		NRF Condition

2.11 **MSAG Update Completion Days** - The number of days which pass from the date the MSAG change was initiated by the 9-1-1 PSAP to the date the service provider completes the change into the MSAG data base, the MSAG data is available for query and the ALI and SR data bases are updated if applicable.

Responsibility: Service Provider and PSAP

Data Element Relationship:

Total MSAG Update Completion Days	=	Average Days to Complete
Total Number of MSAG Changes		MSAG Changes